Teaching Medical Students to Reflect “Deeper”

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Reflection Defined

“Critical reflection is the process of analyzing, questioning and reframing an experience in order to make an assessment for purposes of learning and/or improve practice.”

Aronson L: Med Teacher 2011;33:200-5
Experiential Learning Cycle
(Andrea Corney at www.edbatista.com/2007/10/experiential.html)

ACT
Noticing an Event
Facts (What happened?)

APPLY
Action Plan
Future (What will I do differently?)

REFLECT
Reflective Observation
Feelings (What did I experience?)

CONCEPTUALIZE
Making Meaning – Analysis & Learning
Findings (Why did this happen? What did I learn?)

Why Do Reflection?

• Develops critical thinking skills and clinical reasoning
• Failure to reflect leads to “physician overconfidence” and diagnostic error
• Fosters professionalism
• Improved therapeutic relationship
• Necessary for effective use of feedback
Introduction

- Prior to our intervention, students were given a reflective writing assignment with no explanation of critical reflection.

- Primary Research Hypothesis:
  
  A new curriculum enhancement was introduced during the third year of medical school that would facilitate the development of written critical reflection.

Teaching Reflection
Teaching Reflection

- 90-Minute Reflection Curriculum

Four minute video from the TV show *Scrubs*

Large group discussion of the key concepts and core components

Small group interactive exercise to practice

A faculty presenter shared a personal reflection.

Teaching Reflection

- Students were then asked to write a reflection paper based on an open ended prompt.

Please write a 1-2 page typed reflection paper regarding interactions you have had with patients. Ideas for the theme:

1) The impact a certain patient had on you or your impact on a patient
2) Some personal lesson learned
3) Some struggle a patient had to endure
Evaluating our Curriculum

Evaluation of the Curriculum

Research Design:

- Historic Group Comparison*
  - Current academic year June 2012 – June 2013
  - Past 3 academic years matched to the same month

Evaluation of the Curriculum

Research Design:

- **Written Reflection Papers**
  - Four faculty reviewers graded each reflection paper using the REFLECT rubric.
  - Faculty were blinded to the names of the students and the year written.
  - Discrepancies in grading were resolved by consensus.
  - Faculty piloted the process with 30 past reflection papers (not included in the final analysis).

- **Primary Outcome - “Critical Reflection” level 4 using the REFLECT rubric**


Evaluation of the Curriculum

Fostering and Evaluating Reflective Capacity in Medical Education: Developing the REFLECT Rubric for Assessing Reflective Writing

Hedy S. Wald, PhD, Jeffrey M. Borkan, MD, PhD, Julie Scott Taylor, MD, MSc, David Anthony, MD, MSc, and Shmuel P. Reis, MD, MHPE

**Method**

Following a comprehensive search and analysis of the literature, the authors developed an analytic rubric through repeated iterative cycles of development, including empirical testing and

**Results**

The final rubric, the Reflection Evaluation for Learners’ Enhanced Competencies Tool (REFLECT), consisted of four reflective capacity levels ranging from habitual action to critical reflection, with focused criteria for each level. The rubric also evaluated RW for transformative REFLEC iteration analysis.

**Conclusions**

The REFLECT is a rigorously developed, theory-informed analytic rubric, demonstrating adequate inter-rater reliability, face validity, feasibility, and acceptability. The REFLECT rubric is a reflective analysis innovation supporting development of a reflective clinician through formative assessment and enhanced crafting of faculty feedback to reflective narratives.
Evaluation of the Curriculum

<table>
<thead>
<tr>
<th>Reflection Level</th>
<th>Non-Reflective 1</th>
<th>Thoughtful Action 2</th>
<th>Reflection 3</th>
<th>Critical Reflection 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Writing Spectrum</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sense of Writer Presence</td>
<td>Writer partially present</td>
<td>Writer partially present</td>
<td>Writer largely or fully present</td>
<td>Writer largely or fully present</td>
</tr>
<tr>
<td>Description of Conflict, Disorienting Dilemma, Challenge or Issue of Concern</td>
<td>No description</td>
<td>Absent or weak description</td>
<td>Description</td>
<td>Full description that includes multiple perspectives, exploring alternative explanations, and challenging assumptions</td>
</tr>
<tr>
<td>Attending to Emotions</td>
<td>Little or no recognition or attention to</td>
<td>Recognition but no exploration or attention to</td>
<td>Recognition, exploration, and attention to</td>
<td>Recognition, exploration, attention to and gain of emotional insight</td>
</tr>
<tr>
<td>Analysis &amp; Meaning Making</td>
<td>None</td>
<td>Little or unclear</td>
<td>Some</td>
<td>Comprehensive</td>
</tr>
</tbody>
</table>
Evaluation of the Curriculum

Research Design:

➢ Statistical Analysis:
  - Primary Outcome: non-parametric tests using Mann-Whitney U test
  - Inter-rater reliability: kappa statistic

➢ Statistical Significance:
  - Standard $p \leq 0.05$

Evaluation of the Curriculum

Results: Descriptive: N = 310

<table>
<thead>
<tr>
<th>Reflection Level</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonreflective</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Thoughtful Action</td>
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<td>73</td>
<td></td>
<td></td>
<td>135</td>
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<tr>
<td>Total Count</td>
<td></td>
<td></td>
<td>94</td>
<td></td>
<td>310</td>
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</table>

<table>
<thead>
<tr>
<th>Reflection Interpretation</th>
<th>Total Count</th>
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</thead>
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<td>6</td>
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<tr>
<td>Critical Reflection</td>
<td>94</td>
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<th>4</th>
<th>Sum</th>
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</thead>
<tbody>
<tr>
<td>Nonreflective</td>
<td>1.94%</td>
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<tr>
<td>Thoughtful Action</td>
<td>24.19%</td>
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<tr>
<td>Total Count</td>
<td>43.55%</td>
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<tr>
<td>Critical Reflection</td>
<td>30.32%</td>
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</table>

<table>
<thead>
<tr>
<th>Total</th>
<th>100%</th>
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</thead>
</table>

Results: Descriptive: N = 310
Evaluation of the Curriculum

Results: Primary Outcome – Level 4

Results: Inter-rater Reliability (weighted kappa statistic)

<table>
<thead>
<tr>
<th>10-week Junior Medical Student Rotation</th>
<th>Kappa Statistic*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A (June – August 2012)</td>
<td>0.33</td>
</tr>
<tr>
<td>Group B (August – November 2012)</td>
<td>0.37</td>
</tr>
<tr>
<td>Group C (November – January 2013)</td>
<td>0.36</td>
</tr>
<tr>
<td>Group D (January – April 2013)</td>
<td>0.27</td>
</tr>
<tr>
<td>Group E (April – June 2013)</td>
<td>0.38</td>
</tr>
</tbody>
</table>

Kappa statistic interpretation*

Agreement Description

$K = 0$  "poor"

$0.21 – 0.40$  "fair"

$0.41 – 0.60$  "moderate"

$0.61 – 0.80$  "substantial"

$0.80 – 1.0$  "almost perfect"

Evaluation of the Curriculum

Results: Effectiveness of blinding of “old” (O) versus “present” (P) written reflection papers

Overall Percentage Agreement = 59%
(Overall percentage agreement expected by chance = 50%
\( p > 0.05 \))

Kappa (\( K \)) statistic = 0.17

Evaluation of the Curriculum

Discussion: Conclusion

- Our 90-minute educational intervention improved “critical reflection” (level 4 of the REFLECT rubric) by junior medical students
Evaluation of the Curriculum

Discussion: Strengths of the Study

➢ Blinding of faculty graders was successful
➢ Comparison group pre- and post-intervention
➢ Four independent faculty graders

Discussion: Limitations of the Study

➢ Not a true randomized trial
➢ Low inter-rater reliability among the 4 faculty graders. Possibly due to
  ▪ Graders themselves
  ▪ Interpretation of the REFLECT rubric
  ▪ Limitations of the analytical approach

Results are strengthened by the final decision based on consensus.
Evaluation of the Curriculum

**Discussion: Conclusion**

- More students are able to reflect “deeper” than prior to the intervention
- May improve their professionalism, response to feedback and coping skills
- When replicated we believe our intervention could produce similar results

**Discussion: Next Steps**

- Improve inter-rater reliability
- Other methods to improve critical reflection
  - Feedback, integrated teaching throughout the 4 years of med school
- Correlations with other clinical outcomes
- Partnering with other institutions
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Acknowledgements

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